~~ABSTRACT~~

~~A system and method for processing and generating control signals for the real-time controlling of signal processors, synthesizers, musical instruments, MIDI processors, lighting, video, and special effects in performance, recording, and composition environments. The invention provides for the use of incoming control signals to control events and parameters of low-frequency oscillators and transient generators. The invention also provides for the processing of control signal values such as addition, multiplication, mirroring, offset, etc., individually or in combination with one another. The invention further provides for the conversion of one type of control signal to another type of control signal, for example conversion of MIDI "note_on message" parameters such as note number and velocity into MIDI "continuous controller messages" etc. The invention is particularly directed towards, but not limited to, the processing and generation of control signals in the form of MIDI messages.~~

Abstract of the Disclosure

Multi-channel audio signal processing systems and techniques are provided for electronic instruments having multiple and distinct output channels. Such systems may be used in conjunction with instruments comprising multiple vibrating elements, each with a dedicated signal output. Each received audio signal channel may be directed to a dedicated or shared signal processor for variably changing selected attributes of pitch, timing, timbre, and amplitude in ways that are unique for each signal. Signal processors may be shared using an allocating mixer, allocating switch, or both. An output mixer may be used to mix signal processor output signals into one or more outgoing mixed audio signals. Signal processors, mixers, and switches may be configured by stored program control and controlled in real-time. Real-time pitch variations can be used to change the pitch organization of fixed-pitch vibrating elements within an electronic musical instrument.